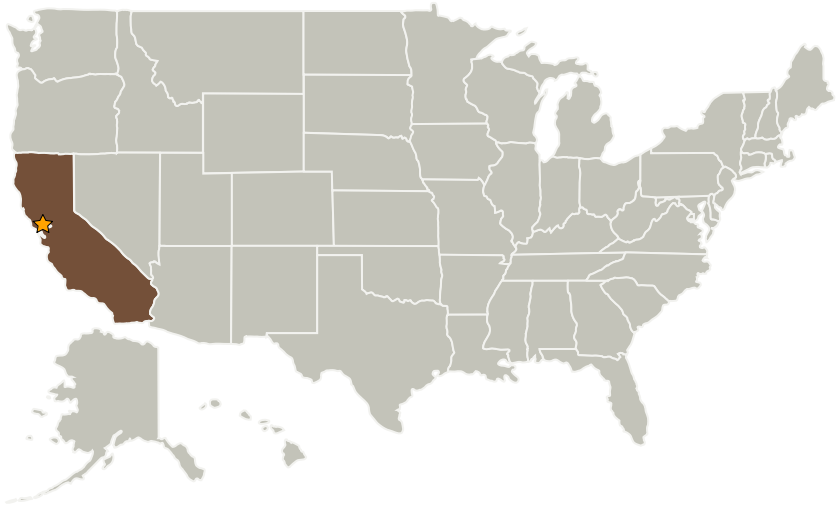
A Fiber Raman Spectrometer for Field Detecting Geological Materials, Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

High throughput, fast detection and characterization of geological materials have become important challenge for future lunar robotic rover exploration and planetary missions. To allow for sample characterization on the moon and Mars, rover missions need to decide what samples to acquire for further onboard analysis. An in situ non-destructive detection technique is highly desirable remote sensing tool for many future missions. We propose to develop a fiber Raman spectrometer for field detecting of geological materials. Recent advances in fiber lasers, fiber optic probes and Raman analysis techniques make the development of such a key component feasible. We expect our innovative design for fiber Raman spectrometer will significantly improve the flexibility of remote Raman collection, so that the field spectrometer's overall performance would be intact and extremely flexible for the field detection.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Crystal Research, Inc.	Supporting Organization	Industry	Fremont, California

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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California

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Suning Tang

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.2 Atomic and Molecular Species Assessment